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THE MANAGEMENT OF INDIA'S WILD LIFE SANCTUARIES AND NATIONAL PARKS

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PART III

(With one coloured and 5 black and white plates)

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INTRODUCTION

This paper forms the third of the series, Part I having appeared in the Society's *Journal*, Vol. 51, No. 1 (December 1952), and Part II in Vol. 52, No. 4 (April 1955). With the slow but gradual evolution of properly organised wild life conservation in India, with successive meetings of the Indian Board for Wild Life and its Executive Committee, and with more travels on my part around India's wild

life centres, it is inevitable that there should be a succession of these papers at two- or three-year intervals.

Since writing the last paper, a few places in Assam, Madras, and Mysore have been re-visited; but in particular the famous Gir Forest of Saurashtra was visited for the first time in January 1956, and the present paper naturally deals mainly with this most interesting place and its peculiar problems.

RECENT WORK OF THE INDIAN BOARD FOR WILD LIFE

Since Part II of this series was written, the activities of the Indian Board for Wild Life in connection with national parks and sanctuaries may be summarised as follows:

The Executive Committee and the Board itself met in Calcutta in January/February 1955 and discussed the need for clarifying the general principles that should govern the creation of national parks, wild life sanctuaries, and protected areas. The Board called attention to the following points:

(a) National Parks.

(i) National Parks are areas set apart by an Act of the competent Legislature for permanent preservation. Such areas may have for their objective the preservation of one or more of the following features: geological, pre-historical, historical, archaeological, scenic, faunal, and floral.

(ii) It is not an essential condition of National Parks that there should be no human intervention. Where it is desired to exclude human intervention altogether, it may be possible to set apart a suitable part within the National Park, a *sanctum sanctorum* which may receive absolute protection.

(iii) Such parks are not to be created lightly.

(iv) In framing proposals for the constitution of National Parks, the Board considers it desirable that State Governments should consult it and avail themselves of the technical knowledge and experience at its disposal.

(v) The Board recommends further that legislation to be enacted in various States for the creation and management of National Parks should follow a common pattern. In order to facilitate this, the Board will prepare and circulate a model draft bill.

(b) Wild Life Sanctuaries.

Wild Life Sanctuaries are areas ordinarily set apart by an Order of the State Government for the purpose of preserving wild life. The management of such sanctuaries is adequately dealt with under Resolution 6 'Protection of Nature and Wild Life' of the Mysore Session of the Board held in 1952. The Board recommends that sanctuaries conforming to the standard laid down under Resolution 6 (b) of the Mysore Conference may be constituted as such.

(c) Protected Areas.

In many States there may be areas where it may be considered expedient:

(i) to afford special protection to wild life, in order to enable

species of wild life which are on the verge of extinction to re-establish themselves;

(ii) to afford protection to wild life attracted to water impounded in River Valley Projects and to other irrigation works;

(iii) to afford protection to wild life in and around large towns and sacred places.

Such areas may be constituted by an order of the Government, which may also lay down the degree of protection.

The Executive Committee of the Board met at Ootacamund in May 1955, and among other resolutions resolved to advise the State Governments that, pending the constitution of any sanctuaries into national parks, any attempt that might be made to change their existing character or whittle away their resources in any way should be guarded against. It also examined the Draft National Parks Bill clause by clause, and made a number of suggestions to be incorporated.

The Executive Committee again met at Sasan Gir in January 1956 and considered a great number of items dealing with wild life conservation in general. As regards wild life sanctuaries and national parks in particular, it was decided to collect information from all sources regarding the methods of preventing diseases contracted by wild life from domestic animals grazing in or near sanctuaries. The Draft Model Bill for National Parks, as finalised by the Law Ministry, was again considered before being sent to the State Governments.

In 1955 national parks were created in the following States: Kanha in Madhya Pradesh, and Shivpuri in Madhya Bharat.

PROPER LAND USE ESSENTIAL FOR WILD LIFE PRESERVATION

In most parts of the world nowadays the rapidly increasing human population, with consequent increasing demand for land for settlement, cultivation, and grazing, presents grave problems. When such a demand for land occurs near reserved forests or wild life sanctuaries, forest officers and wild life conservationists often find it difficult to convince land-hungry people that it is in the public interest to continue maintaining these forests and sanctuaries.

Moreover, there is a commonly held idea that wild life is something intangible and abstract, something to be appreciated by the select few who are able to comprehend the aesthetic, recreational, and biological value of flora and fauna. Even some educated persons in high positions in India have been known to exclaim 'We cannot afford to keep Kaziranga/Kanha/Gir Forest. Human beings are more important than wild animals. These places must be given up to settlement and cultivation.'

In such matters one must be realistic: the land-hungry people and their political leaders can produce facts and figures to support their case, and so we must be in a position to prove that a good wild life sanctuary has a greater value to the country as such, rather than just as an area of land to be opened up for settlement or grazing. Otherwise, if we cannot show good reason why Kaziranga/Kanha/Gir Forest should continue to be maintained as wild life sanctuaries or national parks, then we will sooner or later lose them.

It is really all a matter of proper and effective land use. Land must, in all places, be put to the best possible use after taking into consideration each particular case; and it must be carefully considered whether a sanctuary or national park is more valuable to the country as a whole if it is maintained as such, or if it is opened up for settlement, cultivation, and grazing.

As wild life has dwindled and is still dwindling very rapidly, and as wild life and beautiful unspoilt scenery are a priceless irreplaceable heritage and a most valuable national asset, it is obvious that sanctuaries must be safeguarded, even if it may bring some temporary unpopularity on those who have to enforce such measures.

To get down to rock-bottom facts and figures, I will state the general position at one of India's foremost sanctuaries, Kaziranga in Assam. In recent years several square miles of valuable sanctuary land within the southern boundary, favourite haunt of rhino, wild buffalo, and deer, and accessible to visitors even in the rainy season, have been opened up to villagers for grazing their tame buffaloes and cows. This pressure on the sanctuary is increasing, as the following figures of domestic buffaloes allowed to graze inside the sanctuary show:

<i>Year</i>	<i>Number of domestic animals allowed to graze inside the sanctuary</i>
1950	100
1954	500
1956	1000

If this rate of encroachment is allowed to continue and if similar encroachments are allowed in other parts of the sanctuary, with accompanying cattle-borne diseases spread among the wild animals, there will be very little left of Kaziranga and its unique fauna in fifty years' time.

Now the following figures show the tourist or economic value of Kaziranga, with consequent revenue for Assam in particular and for India as a whole:

<i>Year</i>	<i>Visitors from abroad</i>	<i>Visitors from India</i>	<i>Total</i>
1950-51	25	21	46
1951-52	78	42	120
1952-53	167	106	273
1953-54	172	134	306
1954-55	188	306	494
1955-56	287	616	903

As revenue from the tourist trade is an indirect one, not confined to one place but spread over the whole country visited, it follows that for every Re. 1 spent by foreign visitors at Kaziranga about Rs. 30 or 40 are spent in the rest of India. Therefore for every Rs. 6,000 (the amount paid by foreign tourists at Kaziranga in 1954-55) spent here, about Rs. 2,10,000 are spent in the rest of India. And if the increase of popularity of Kaziranga continues at the



Wild Tusked Elephant in Bandipur, Mysore.

(Photo : E. P. Gee)



Hog Deer in Kaziranga, Assam.



Mother and baby Great Indian One-horned Rhinoceros in Kaziranga, Assam.

(Photos : E. P. Gee)

above rate, the revenue to Assam and India will be very great indeed in fifty years' time.

It is clear, therefore that the economic value of Kaziranga as a wild life sanctuary is so important to Assam and to India that this piece of land (166 square miles) should be preserved inviolate with sacrosanct boundaries as a national park. All possible steps should be taken so that the local surplus village population with their increasing cattle should be given land and grazing facilities elsewhere, or else the numbers of their cattle reduced.

So far, then, from not being able to afford to keep Kaziranga/Kanha/Gir Forest, we cannot afford to lose such places.

This very same problem occurs all over India, and the case of Kaziranga is duplicated in most other States. In fact it is found all over the world; and as George Petrides (1955) has pointed out in his admirable 'Report on Kenya's Wild Life Resources and the National Parks', Kenya's wild life and the tourist trade brought by it are of the utmost value to the country as a source of considerable national income. He has established that improper land use is chiefly responsible for the diminution of Kenya's wild life, and that complete wild life habitats should be carefully preserved.

It is perhaps not fully realised in India that the potential value of her wild life as a source of revenue from tourists is very great indeed. Wild life is an important industry, even in the U.S.A. In Kenya wild life ranks as the third most important industry after coffee and sisal. Tourists who go to see, and occasionally shoot, wild life in Kenya spend about four crores of rupees annually there. Each year there are about 1,00,000 visitors to the Nairobi National Park alone to see its wild life.

Wild life is an industry as tangible as tea, oil, jute and coal, for which land is required to be set aside in select areas for the benefit of the whole country for all time.

SOME POTENTIAL NATIONAL PARKS

The following places, all potential national parks of India, were visited by the writer since the previous paper was written, and observations were made as under:

I. A s s a m. In December 1954 the new Tourist Lodge at Kaziranga was opened to visitors. Specially constructed for visitors to the sanctuary, this five-roomed ten-bedded rest house has modern sanitation and electric light. It is fully equipped in every respect for visitors, who need now bring nothing with them in the way of bedding, food, servants etc. A new tree-top house has recently been constructed north of Hulalpat Camp, but I have not yet had the opportunity of visiting this place. A set of eight picture postcards depicting wild life in Assam has been printed, 1000 of each, for sale to visitors. This is an encouraging step in the right direction.

A rest house has also been built at the foot of the hills near the Manas River in the North Kamrup (Manas) Sanctuary. When the new access road, aligned to avoid erosion by the river, becomes consolidated and when the rest house is fully equipped, this sanctuary

should be a most attractive place for visitors. No more has been heard of the proposal for requesting the Bhutan Government to create a sanctuary on their side of the border, adjacent to the Assam sanctuary. It is to be hoped that a move in this direction can be made before it is too late.

Unfortunately no progress has been made with the draft Assam National Parks Bill, by which it was hoped that by now these two fine wild life sanctuaries of Assam would have gained the status of national parks.

A small one-and-a-half-square-mile wild life sanctuary was created at Garampani in 1952; and since poaching has been reduced at these seven salt-licks and hot-springs the number of wild animals and birds to be seen there has increased considerably. Considering that this area is famous for butterflies and plant life as well as for wild life, Garampani Wild Life Sanctuary deserves full attention for strict protection and development.

2. M a d r a s. I re-visited Mudumalai Sanctuary on the afternoon of May 10th and morning of 11th 1955, staying the night at the Kargudi Rest House. I must congratulate the Madras Government on a considerable all-round improvement in the administration of this place since my first visit made in 1950. The Rest House had been improved and was cleanly kept. A separate 'game staff' had been provided purely for wild life preservation in the sanctuary, and consists of one game warden, one assistant game warden, two forest guards and two watchers. This staff works within the Forest Department, with no forestry duties to perform, and thus is able to concentrate on the elimination of poaching and the observation and protection of wild life. This is just the kind of administration required for sanctuaries in India under the present policy of not having a separate wild life department.

There was no fee for cameras, and this is a wise policy, especially as the forest and undergrowth are very thick and photography correspondingly difficult. I obtained no photographs during my two visits, although my three cameras were held ready all the time.

The extensions to the sanctuary, I understand, are still in the proposal stage, and shooting in these blocks has not yet been stopped. As I was unable to visit these parts I am unable to comment on the desirability or otherwise of these extensions; but in general it is considered that a larger wild life sanctuary is preferable to a smaller one, provided it can be effectively administered.

I make the following suggestions, not in a critical sense but as ideas for the further improvement of the sanctuary:

1. As the forest is very thick with an annual average rainfall of 65" compared with 38" at Bandipur, and as the viewing of wild life is difficult with photography still more difficult, I think the possibility might be considered of creating a few grassy areas or *maidans* of, say, 200 or 300 yards in width, in suitable areas accessible to visitors, where wild life could be viewed in the open, as at Kanha in Madhya Pradesh.

2. Salt-licks and water-holes could be made at these open places, so that wild life can be easily located, seen, and photographed.

3. More motorable link roads would be a great advantage, with Bandipur as the ideal.

4. Exploitation of timber and plantations of young trees might be eliminated in the vicinity of the Rest House and the parts chiefly visited by visitors, so that the conditions of an 'inner sanctuary' might be fulfilled.

5. At least 75% of the wild dogs should be destroyed. I saw wild dogs on three occasions in only two visits, and on one of these occasions a chital was being chased.

6. The charge for a night at the bungalow could be increased from Re. 0-8-0 to about Rs. 2 or Rs. 3, and more amenities provided such as a filter and drinking water.

7. The compound of the bungalow could be improved with flowering trees, shrubs and plants (preferably local indigenous flora, rather than the ordinary flowers found in gardens in towns).

8. A pamphlet describing the sanctuary and its wild life, with map and illustrations, would be very advantageous.

9. I noticed new signboards, with 'Mudumalai Game Sanctuary' and the title 'Game Warden', were being used. The word 'game' could in all cases well be replaced by the words 'wild life', in accordance with the general policy adopted in India.

3. Mysore. I re-visited Bandipur Sanctuary on the afternoon of 12th and morning of 13th May 1955. Coming here immediately after Mudumalai, I was struck by the difference in vegetation etc. With an annual average rainfall of about 38", instead of 65" at Mudumalai, the forest was sparse, stunted and without much undergrowth at this time of the year, making conditions ideal for viewing and photographing wild life, in most photogenic surroundings.

My visit on 12th was unfortunately marred by the continuous breaking down of the Forest Department lorry which was taking me round. A herd of about 30 'bison' was observed, but they may have been frightened by the misfiring of the lorry engine and were very wary. No photographs were obtained.

The morning visit on elephant-back was better, and in addition to chital and peafowl I saw and photographed a fine tusker elephant.

Some suggestions for the even further improvement of the sanctuary were made by me in December 1952, and to these I would add the following:

1. The right vehicle for visitors to see the sanctuary from, I think, is not a lorry but a Land-Rover with a station-wagon or truck-like body, with a trapdoor in the roof for photography. In East Africa I tried out every kind of vehicle, including a Bedford Hunting Truck and Land-Rovers with truck-like bodies and trapdoor ('sunshine') roofs. The latter were the best, and could seat 6 people comfortably, and are cheap on petrol. I used this kind of vehicle in tours in Kenya, Uganda, and Tanganyika, leaving the road and going right across country at times.

2. I saw a 'tiger block' with a sandy path being prepared all round it, presumably for tracking down a tiger, adjacent to the sanctuary boundary. I hope that tigers are not being shot in the adjacent forests.

3. The tiger, which is the most spectacular of beasts in India, and possibly the world, is the very animal most sought after by visitors to see and photograph. If any sanctuary in India can 'lay on' a tiger for visitors to see, this will be the sanctuary or national park *par excellence*. Possibly some artificial means would have to be employed, viz. keeping a tame or semi-tame tiger in an enclosed area, or feeding wild ones regularly (with 'doped' meat?), or even making a natural-looking enclosure with a moat all round as in the Mysore and Travancore Zoos, only larger in extent.

There might be an objection that such a tame or semi-tame tiger would appear unnatural, while the 'purists' might object simply on principle. But how otherwise can we show our tiger to visitors? The vast majority of the public, who have few chances of visiting sanctuaries, would welcome such a step. And after all, many of the lions of the national parks of Africa have for various reasons (among which man-given meat can sometimes be included) become semi-tame and display themselves openly to the many thousands of visitors who come from all parts of the world to see them, thus bringing in a substantial revenue to the country and giving a fillip to the cause of wild life preservation.

In this connection it is interesting to note that Champion (1939) expressed the conviction that the tigers of the Hailey National Park would in due course 'carry on their daily life regardless of the presence of human beings in the way that lions are now to be seen doing in the national parks of Africa'. As they have not done so, then other means should now be tried so that these fine creatures can be seen and enjoyed by visitors.

4. Saurashtra. A meeting of the Executive Committee of the Indian Board for Wild Life at Sasan Gir from January 18th to 20th 1956 gave me the long awaited opportunity of seeing the famous Gir Forest and its lions. Two extra days were very kindly allowed by the hospitable Government of Saurashtra, making a total of five days altogether. Under the personal and knowledgeable guidance of the Jam Sahib of Nawanagar we were shown lions; and all the available information was given to us. Thus by studying the material that has been written about the Gir and its lions, by listening to all that was told us by our hosts the Rajpramukh, the Minister, the Conservator, and others, and supplemented by personal observation, it was possible even in the short space of five days to come to a few general conclusions about what must be one of the most complex and interesting wild life centres of India.

It was particularly interesting for me to see the Indian lion in its habitat, after my visit to East Africa where the African lion is one of the main attractions.

I will confine myself to only a few broad generalisations about the Gir, and will avoid touching on such aspects as description, history, census, forest operations, etc., which have been so ably dealt with by others. In fact most of my observations will purposely be of such a general nature, as rather to be the basis of future and more detailed investigations than attempts at passing final verdicts, which

can only be arrived at after very much more thorough and prolonged field work.

The first thing that struck me was that here was a first-class potential national park, which did not enjoy the status even of a wild life sanctuary! At the time of writing this paper the Gir is a region consisting partly of Reserved Forest and partly of village settlements, cultivation, and grazing areas, through the whole of which runs a railway and some roads. It was explained to me that as there were villages, cultivation, and grazing of domestic livestock in the lion areas, therefore they had not been created a national park.

If this is so, then this must surely be the result of a misunderstanding. For while it is true that the generally accepted definition of an ideal faunal national park is an area free from human settlements etc., it should not follow that because there happen to be some human settlements in an area therefore that area cannot become a national park! Many of the world's finest faunal national parks have villages and grazing of livestock inside them, such as the Nairobi National Park in Kenya, the Serengeti National Park in Tanganyika, the Queen Elizabeth National Park in Uganda, and the Kafue National Park in N. Rhodesia.

For more detailed examples, there are 198 Somalis living in the 40-square-mile Nairobi Park, with 200 head of cattle. In the 5,500-square-mile Serengeti Park there are approximately 2,000 Masai and others living in the park, with their 3,00,000 head of cattle, sheep, and goats. In the 756-square-mile Queen Elizabeth Park there are villages containing about 2,000 inhabitants, though their livestock is few in numbers due to tsetse fly.

It is obvious that where there is good grazing for wild herbivorous animals, there is also good grazing for domestic animals, with accompanying human settlements. This is the big problem in East and Central Africa: how to reconcile the two diverse objectives of wild life preservation and safeguarding the interests of the indigenous and sometimes nomadic human populations.

If such villagers can be moved by rehabilitation, or if their villages can be excised from the proposed national park, then so much the better. But if they must be included, and if for political and other reasons the grazing by their livestock cannot be prevented, then at least this can be restricted, controlled, and regulated after a careful study of the conditions and in conformity with a wise policy of effective land use.

In this respect we can learn an interesting lesson from East Africa. When, for example, the Serengeti National Park of Tanganyika was created, it was laid down that the rights of the indigenous local inhabitants would be safeguarded. But these 'rights' were never defined. Consequently these indigenous inhabitants can now at any time hold a meeting and demand something as a right, which it is very difficult for Government to oppose. Moreover, more people may come into a park from outside and cattle may increase enormously in numbers, making subsequent control extremely difficult. Further, the habits of the villagers may change: for example the Masai in East Africa never used to hunt wild animals, but since intermarrying with other tribes has taken place some of them have now taken to

hunting, with consequent detriment to the wild life of the national parks.

When the Queen Elizabeth Park of Uganda was being created in 1952-54 there was some opposition, and the 2,000 villagers resident within the boundaries of the proposed park were allowed to remain. But regulations ensure that no cash crops are allowed to be grown by them, and only sufficient cultivation is allowed to be done for the production of their own food. No hunting is allowed. A fishing village area was excised entirely from the park.

From all the foregoing facts, then, it follows that the Gir Forest could be created a national park with some, if not all, of the *maldharis* and others remaining there with their livestock, provided that suitable legislation is enacted clearly defining their rights, demarcating the boundaries of their land for cultivation and grazing, regulating the numbers and types of their livestock, ensuring that precautions are taken against cattle-borne diseases, prohibiting further inroads of men and livestock from outside, and so on.

In fact the villages in the Gir, the *maldharis*, and their beasts can even be regarded as a picturesque attraction of a future national park, providing interesting subjects for sightseeing and photographing by visitors.

There is not a shadow of a doubt that the Gir Forest and its lions, as well as its other wild animal and bird life, would rank as one of the best national parks of India. Its close proximity to Bombay, the threshold of India's tourism, is an additional attraction. It is only one-and-a-half hour's flying from Bombay to Keshod and one-and-a-half hour's motoring time from Keshod to Sasan Gir, where a palatial Guest House with numerous well-equipped rooms awaits a regular stream of tourists and visitors. These potential tourists and visitors do not come only because there is no publicity, no provision for their reception, and no open-for-all arrangements to show them the lions.

A further attraction to the Gir as a national park should be the new one-and-a-half square mile lake due to be formed by the dam over the Hiran River. In fact a veritable 'Periyar' in the heart of the lion country is about to come into existence, with the two-fold advantage of perennial drinking water for wild life and scenic beauty for human visitors.

SOME ADDITIONAL NOTES ON THE LIONS OF THE GIR FOREST

1. *Indian Lion and African Lion.* A careful comparison of lions as seen in my cine films of East Africa and of the Gir reveals that the Indian lion is perhaps a little stockier, a little shaggier, less whitish in the underparts, less dark in the head and neck, has a bigger tuft on its tail and has a mane not quite as big. The common notion that the Indian lion is a maneless or mangy beast is quite erroneous. I was very impressed with the lions which I saw in the Gir, which numbered seventeen in four days of looking for them. Four lions with reasonably good manes were seen, and the lionesses were fine animals,



Typical thorny scrub on the fringe of the Gir Forest. Two of a pride of five Lions can be seen on a 'kill', while a kite circles overhead in anticipation.

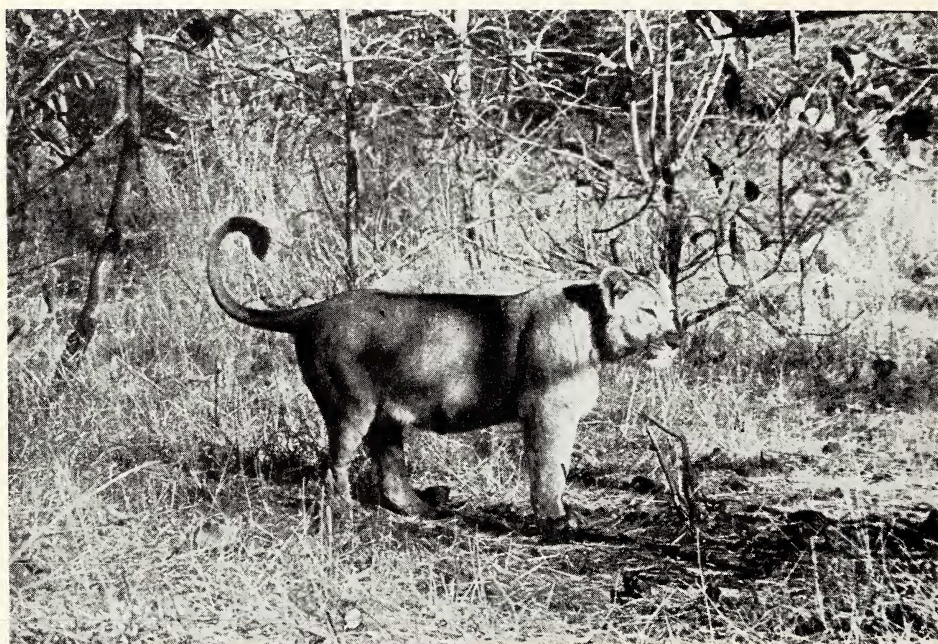


A young male Lion, with mane starting to grow, comes out to a 'kill'.

(Photos : E. P. Gee)



A hurriedly constructed 'hide' for photographing lions. (This is the lions' view of the 'hide'.)



A young adult male Lion photographed from the above 'hide'. Its mane has not yet developed.

(Photos : E. P. Gee)

Regarding size of manes of maned lions, it has often been pointed out that the presence of thick undergrowth, thorny scrub, etc. in India is a deterrent to the growing of big manes. It is claimed that the manes of Indian lions get too much 'combing' and are consequently smaller than those of their African cousins. R. I. Pocock, (1939), however, does not agree with this. He says: 'This notion that the combing action of thorns accounts for the scantiness of manes in many lions has often been thoughtlessly quoted with approval as supplying a satisfactory explanation of the fact. There is not a word of truth in it. The most that thorns could achieve would be keeping the mane tidy by the removal of dead, moulted hair, which might for a time adhere to the growing mane before being shed. They could no more affect its potential luxuriance than the daily use of a comb can reduce the quantity of living hair on a woman's head'.

I feel myself that further field investigations and zoological garden study are needed to decide this matter. A possible explanation of the slightly smaller manes found on Indian lions could be found in the fact that their Gir Forest habitat, which is only about 200 to 400 ft. above sea level, has a much hotter climate; whereas in Africa the lions range over comparatively cool uplands of 3,500 to 6,000 ft.

Another reason for the lack of lions with really good manes in the Gir may be found in the custom in the past for V.I.Ps. to come and shoot. Up till quite recently, a quota of about four lions were officially allowed to be shot annually, and as a maneless or poorly-maned lion is no trophy, only the lions with the largest manes got shot, inevitably resulting in a stock of lions with smaller manes. Fortunately this custom has now ended, and Indian lions are fully protected by the Government of Saurashtra. It is to be hoped that if any reduction in numbers is ever contemplated in the future, then only the aged and sickly lions and lionesses will be destroyed by persons specially deputed for the job by the authorities in charge of administering the area.

Wynter-Blyth (1956) considers that the number of lions has already increased sufficiently to necessitate a reduction in their numbers, in order to prevent overstocking within the limits of the Gir Forest and to counter inevitable complaints from the *maldharis*. With his great experience of the area he is most probably right in this. But his suggestion that five or six permits per annum to shoot lions might be given as an experimental measure is fraught with the very danger referred to above, unless such permits are given only for lions outside the Gir Forest and only for lions without good manes.

2. Different Varieties of Indian Lion. The Jam Sahib of Nawanagar, whose knowledge of the Gir lions is only equalled by his intense interest in them, has informed me that there are two distinct varieties of lions in the Gir. These are described as (i) the 'donkey' variety, more vertical-shaped, bigger, fiercer, and which go in prides of up to six in number, and (ii) the 'waler' variety, more horizontal-shaped, smaller, better natured, and which go in prides of up to fourteen in number.

The Conservator of Forests, Saurashtra, has also informed me that there are 'two distinct sizes of lions in Gir Forests'. But I cannot find this theory substantiated in any journals or books, and consider that this would be a most interesting subject for study in the field. Any evidence to prove or disprove this theory would have to be supported by measurements or photographs of living animals.

3. *Introduction of African Lions into India.* It is known that three pairs of African lions were imported from Africa into India (in about 1916) by the Maharaja of Gwalior,¹ but these were quickly shot out owing to their lack of fear of human beings after a short spell of captivity. As Gwalior, which is SSE. of Delhi, is a very considerable distance from the Gir Forest, it is presumed that there can have been no mixture of African blood as far as the Gir lions are concerned. I am personally against the introduction of African lions into any part of India, and would prefer the Indian lions to remain as 'pure' as possible.

I do not think that any African lions have ever been brought into the Gir, but am indebted to R. W. Burton and E. C. Apcar for drawing my attention to the following newspaper report which alleges that this was in fact done about the year 1890.

According to an article by Lovat Fraser published in a newspaper in India (about 1924?), some African lions were alleged to have been introduced into the Gir prior to the shoot arranged (about the year 1890?) for H.R.H. the Duke of Clarence, elder brother of (later) King George V.

This newspaper article reads: 'When the Duke of Clarence's visit was announced the Junagadh authorities, fearing that he might not get good sport, secretly obtained a number of African lions which were brought across the Indian Ocean in native sailing vessels and turned loose in the Gir. They multiplied amazingly, they were far more formidable than the Indian lions, and they had big manes'.

According to the article, it was not until about 1908 or 1909 that the news of the reported introduction of these lions from Africa leaked out. In 1906, the article continues: 'Lord Lamington, then Governor of Bombay, and several others went to the Gir to shoot . . . At the first day's shoot three lions and a lioness were killed. Lord Lamington, Colonel Kennedy and Sir James du Boulay each got a lion. Major Carnegy, the local Political Agent, was attacked by a wounded lioness and instantly killed, whereupon the camp was broken up . . . The lions all had large manes and were much larger than Indian lions. Sir James du Boulay's lion measured 11 ft., and Colonel Kennedy's was 10 ft. 10 in. I was present at the shoot and noted the measurements myself. The manes and measurements produced much mystification. It was not until two or three years later that the mystery was privately explained.' (Then follows the passage quoted in the previous paragraph.)

The belief that 'they multiplied amazingly' is easily explained: the Jam Sahib has informed me that in those days the Nawabs

¹ See the note 'Experiments in implanting African lions into Madhya Bharat' by Col. Kesri Singh, *JBNHS*, 53: 465—Eds.

of Junagadh used purposely to let it be known officially that the number of lions in the Gir was very low, about 12 or 13 only. This was because every British Viceroy, Commander-in-Chief, Governor of Bombay, Indian Princes, and others down to persons of less importance were in the habit of longing to be invited to shoot a lion. Even Lord Curzon at the turn of the century was informed that there were only about 12 lions left, and therefore he refrained from shooting and encouraged the preservation of the lions instead. Actually there must have been about 100 lions in existence in those days, if not more. So naturally anyone actually going there and shooting lions would be surprised at the real number of these beasts in the Gir.

The belief that the 'African' or 'mixed African-Indian' lions were 'far more formidable than the Indian lions' may to a certain extent be discounted by the following historical fact: M. A. Wynter-Blyth and R. S. Dharmakumarsinhji (1950) have pointed out that the years 1899 and 1900 were famine years in the Gir, and that in 1901-1904 'almost all the game in the forest had died off, and the lions . . . were living on the edge of the Gir and preying solely on cattle with occasional human victims.' And that subsequently (about 1904-1911) 'the habits of the lions underwent a profound change, for never again are they heard of as a menace to human life. This was in all probability the result of a return to normal conditions after the famine years.'

The record-breaking measurements given above are even more easily explained in L. L. Fenton's book 'The Rifle in India', where the author says: 'At the time of Lord Lamington's shoot in the Gir, when Captain Carnegie was so unfortunately killed by a wounded lion which three of the party were engaged in following up, it was stated that one or two lions which were then shot measured over 11 ft. in length, but it afterwards transpired that the measurements were taken after the animals had been skinned, and they are, therefore, obviously of no value.' As L. L. Fenton was present at the shoot in question as an organiser, his explanation of these outsize measurements can be taken as the correct one.

Another explanation, if such were needed, of such 'record' measurements is this: I am informed that there used to be a system of measuring lions for V.I.Ps. in the Gir which consisted of pulling out the front legs and measuring from the front claws up to the nose and round all the curves.

I have enquired from the appropriate authorities in Saurashtra as to the possibility of there being any truth in the newspaper report of African lions being brought by *dhows* to the Gir. Not only do there appear to be no records or even legends of it ever having happened, but also the report can be discounted for the following reasons:

(i) There was no real shortage of lions in the Gir at the time. (The official low 'estimate' of 12 or so has been previously explained.)

(ii) The voyage from East Africa to Junagadh by *dhow* takes at least two months, and as no *dhow* would attempt the voyage till the monsoon was over lions could not be brought in time for cold weather shoots.

(iii) A very large meat supply 'on the hoof' would have been necessary, making such a project almost impossible.

(iv) Even if such 'imported' African lions were let loose after being caged during a sea journey of at least two months in a *dhow*, they would have quickly fallen victims to the Gir lions.

A possible clue to the start of such a rumour may lie in the following extract from L. L. Fenton's book concerning the shoot for the Duke of Clarence: 'At daybreak I had a visit from the Dewan, who . . . came over to suggest that, rather than that the Prince should be allowed to leave the Gir without bagging a lion, two lions which had been sent out from Junagadh during the night, confined in cages or carts, should be set free in the jungles, and then be driven out to be shot . . . Of course, neither Colonel Kennedy nor I would entertain the Dewan's suggestion for a moment . . . So the matter was dropped, and the lions were sent back to their home in Junagadh. I have often wondered since how the latter would have acted had they been set free.'

4. **Natural Food Supply for the Lion.** It was reported to us that many of the wild deer and antelope, which in addition to domestic livestock form the food supply of the lions, had died of foot-and-mouth disease. It was, therefore, suggested that additional *nilgai* might be captured and imported from elsewhere. This would surely be a very costly venture.

Probably the following steps to increase the natural food supply for the lions would be adequate:

(i) Reduce the incidence of cattle-borne diseases by strictly controlled prophylactic measures, and by the prohibition of more domestic animals being brought in from outside.

(ii) Reduce or prevent any possible shooting of deer and antelope by sportsmen and poachers.

(iii) Put an end to the publicising of wild pig (a valuable lion food) as vermin to be destroyed on all possible occasions.

(iv) Reduce the number of panthers which account for a large number of deer, antelope and pig.

5. **Compensation for Livestock killed by Lions.** A problem in the Gir Forest and its surroundings is the payment of compensation liable to be claimed by *maldharis* and others for domestic animals killed by the protected lions. While it may be argued that people who choose to live and graze their cattle close to the habitat of carnivora in order to get good cheap grazing must face the risk of losing some of their stock without compensation, there are other aspects of the problem which must here be taken into account, e.g., the historical precedent set by the former Ruler, the Nawab of Junagadh.

My own humble suggestion on this point is that as such 'kills' by lions are exactly what are wanted by tourists and visitors to the Gir, a proportion of the revenue obtained from visitors could be allocated as part compensation to the *maldharis* who lose buffaloes and cattle. In other words, when a cow or buffalo is killed by a lion, the owner should immediately report the matter to the appropriate

quarter. Visitors could then be rushed out to the spot (if it is the right time of the year) to observe and photograph the lions from a 'hide', on payment of duly prescribed fees. A substantial revenue would ensue, a portion of which could be earmarked as part compensation to the persons who have suffered loss of livestock.

6. **Number of Lions to be Captured for Introduction into a New Locality.** It is proposed to catch and move a few Indian lions from their present one and only refuge in the Gir Forest to an additional locality within their former range and with suitable conditions of environment. First of all a small area of Tikamgarh in Vindhya Pradesh was contemplated for this venture. More recently it has been provisionally agreed to catch and transfer a few lions on an experimental basis to the Chakia Forest south-east of Banaras in Uttar Pradesh, where conditions are reported to be favourable for the re-introduction of these animals. If the experiment takes place and succeeds, it may be repeated in one or two other parts of India where lions formerly existed, where local present-day conditions are suitable and where natural food supply is available.

In selecting an area for the re-introduction of lions firstly the supply of natural food (deer, antelope, pig etc.) must be adequate; secondly the area should be free of tigers which would obviously resent and oppose the invasion of their territory by other large carnivorous animals and thirdly the villagers and other members of the public in the vicinity should be prepared by suitable publicity beforehand so that they would welcome and assist the experiment.

A problem now confronting us is this: when the time comes to catch and transport a few lions to, say, Chakia Forest, how many should we transport? At first we thought of a pair of lions, or two pairs. Then it was pointed out by a correspondent that perhaps the ratio should be one lion to two lionesses, and that two lions and four lionesses would be the ideal number to transport.

Again more recently it has been maintained that as lions live in family groups, a complete family should be caught and sent to the new home. But what should be the future breeding prospects of such a family party, except that grown-up male cubs would have to pair with their mother and sisters, if and when the father allowed them to do so? I felt myself that two young adult lions and four young adult lionesses from different family groups in the Gir Forest might be the best answer. And then let them sort themselves out in their new home.

This problem was referred to several authorities on wild life in Africa, and the following replies have been received. Keith Caldwell, late of the Kenya and Uganda Game Departments, writes: 'I am strongly of the opinion that re-stocking should be done, if at all possible, by moving one or more complete families. I don't think there is any danger of damage being done by 'inbreeding' and I fancy that, as they grow more mature, the family will split up. The ideal would I think be two families. If two young males and four females are moved may I advise that they are all taken at the same time and let out together. If this is done they are far more likely to

settle down without fighting than if they are liberated in their new homes at different times in different places. In this latter case serious battles are most likely to take place when the wanderers meet each other !'

C. R. S. Pitman, formerly Game Warden of Uganda, writes to say that he agrees with the suggestion of 'two young adult lions and four young adult lionesses from different family groups'. R. Bigalke, Director of the National Zoological Gardens of South Africa, writes: 'I favour the plan of taking two lions and four lionesses from different groups.'

R. A. Critchley, President of the Game Preservation and Hunting Association of Northern Rhodesia, writes: 'We, ourselves, think 2 young males and 4 females is the best combination.'

M. H. Cowie, Director of the Royal National Parks of Kenya, in an interesting letter on the subject of moving lions into a new locality, considers that it should be done in two distinct phases as follows: *First Phase*. One adult lion, at least two adult lionesses, and as many of their half-grown cubs as possible should be moved. It does not matter if the animals are related. If more than one adult lion is moved, they are likely to fight and disrupt the pride. *Second phase*. When the half-grown cubs have grown up and start hunting and courting, then a second adult lion should be introduced, if possible more virile than the first one, so that it can take over domination of the young pride. The old lionesses are likely to accept the original lion, while the young lionesses are likely to prefer the newly introduced lion. This will give the required new blood.

After carefully analysing the above opinions from experts on lions and conditions in Africa, the following would appear to me to be a safe summarisation of the principles which might govern the moving of lions in India:

(i) Only one adult lion, preferably a good maned specimen, should be moved with the first 'batch'.

(ii) The first 'batch', in addition to the adult lion, should include two lionesses, and if possible some of their half-grown or three-quarter grown cubs (preferably female).

(iii) All the above animals in the first 'batch' should be released at the same time and in the same place, with live food tied up for them.

(iv) At a later stage, when the grown-up cubs (either introduced with the first 'batch' or born subsequently) start to hunt and court, a second adult virile and maned lion should be introduced.

SPORT AND WILD LIFE PRESERVATION

It is important that we should recognise the exact status of the sportsman when considering measures for wild life preservation in India. By 'sportsman' I mean, of course, the *bona fide* sportsman who not only scrupulously observes the game laws and shooting rules in respect of close seasons, protected animals, reserved forests, and so on, but who also shoots only a limited number of game birds and animals. The so-called 'sportsman' who is a butcher, or who is in

any way unscrupulous, is a menace to wild life conservation almost as much as the poacher is.

It is universally admitted by all those concerned with conservation of wild life throughout the world that the *bona fide* sportsman is one of the best friends of wild life. For by occasionally tracking and shooting game within the law, he becomes well versed in jungle lore and jungle craft and develops a knowledge and love of wild animals and birds not always obtainable by the man who is purely an observer or naturalist. The *bona fide* sportsman who later in life gives up all shooting for the camera, binoculars, and notebook is usually one of the ablest protagonists of wild life conservation.

It is universally admitted, also, that the presence of a *bona fide* sportsman in a forest is the most effective deterrent against poachers. Obviously no sportsman who has paid for and taken out licenses, permits, and reservations in a Forest Block is going to tolerate any kind of interference from poachers during his shoot. And even if there has been any poaching previous to his shoot he will soon hear about it and 'raise hell'. For this reason poachers usually give sportsmen a very wide berth. And for this reason many experienced sportsmen all over India have been made Honorary Forest Officers in order to assist the Forest Departments of States in the preservation of wild life.

At the meeting of the Executive Committee of the Indian Board for Wild Life held at Ootacamund in May 1955 it was agreed that Game, Shooting, and Fishing Associations play a very important role, and that real sportsmen in any area are an asset in the preservation of wild life. Consequent upon this, the Secretary of the Board in October 1955 addressed a letter to all Heads of State Forest Departments to the effect that Game Associations and Natural History Societies should be encouraged.

And yet, in spite of all the foregoing evidence that *bona fide* sportsmen are an asset to the country in general and to the Forest Department in particular, how often do we hear of sportsmen being rebuffed, of sportsmen receiving no replies to their letters, of sportsmen not being issued with shooting and fishing permits after payment of the usual fees! Worse still, many sportsmen and naturalists have written helpful reports about poaching, bombing of rivers for fish, and other illegalities to the Forest Officers concerned, and have received not only no thanks for their efforts, but not even an acknowledgement!

It is essential to preserve the wild life outside as well as inside our sanctuaries and national parks; and no real progress can be made in India until full encouragement and recognition is given to genuine sport and genuine sportsmen throughout the country.

'HIDES' FOR WILD LIFE PHOTOGRAPHERS

Much has been written by eminent bird photographers on their technique and on the types of photographic 'hides' used by them; but very little has been written on 'hides' for animal photographers. Nowadays roughly three out of every four visitors to a wild life sanctuary or national park carry a camera of some kind. They obviously want photos of wild life, and this requirement of visitors